

amendments that overcome the 35 U.S.C. §112, second paragraph rejection do not narrow the claims.

Claims 1, 3, 10 and 17 stand rejected under 35 U.S.C. §102(b) over JP-A-5-180013. In addition, claims 2, 9 and 18 stand rejected under 35 U.S.C. §103(a) over JP-A-5-180013, and further in view of U.S. Patent No. 5,964,192 to Ishii. These rejections are moot in view of the above amendments.

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



James A. Oliff  
Registration No. 27,075

Mario A. Costantino  
Registration No. 33,565

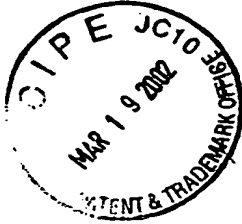
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Attachments:  
Appendix  
Amendment Transmittal

Date: March 19, 2002

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

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APPENDIX

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Changes to Claims:

Claims 1-3 and 10 are canceled.

The following are marked-up versions of the amended claims:

4. (Amended) ~~The internal combustion engine according to claim 3~~ An internal combustion engine comprising:
- a variable valve train capable of adjusting at least one of an opening and closing timing and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;
- a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;
- a throttle valve for adjusting a flow rate of intake air flowing through the intake passage; and
- a negative pressure generating device that controls at least one of the variable valve train and the throttle valve to generate an intake pipe negative pressure when a predetermined condition is satisfied, wherein the negative pressure generating device controls the variable valve train so as to increase pump efficiency of the internal combustion engine and also closes the throttle valve by a predetermined amount, [when a negative pressure for operation of the negative pressure mechanism is insufficient.]

6. (Amended) ~~The internal combustion engine according to claim 3~~ An internal combustion engine comprising:
- a variable valve train capable of adjusting at least one of an opening and closing timing and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;

a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage; and

a negative pressure generating device that controls at least one of the variable valve train and the throttle valve to generate an intake pipe negative pressure when a predetermined condition is satisfied, wherein the negative pressure generating device controls the variable valve train and the throttle valve so as not to generate torque variation of the internal combustion engine, when the intake pipe negative pressure is to be generated.

7. (Amended) ~~The internal combustion engine according to claim 3~~ An internal combustion engine comprising:

a variable valve train capable of adjusting at least one of an opening and closing timing and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;

a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage; and

a negative pressure generating device that controls at least one of the variable valve train and the throttle valve to generate an intake pipe negative pressure when a predetermined condition is satisfied, wherein the negative pressure generating device controls the variable valve train and the throttle valve such that required torque for the internal combustion engine matches actual torque thereof, when the intake pipe negative pressure is to be generated.

9. (Amended) The internal combustion engine according to claim 34, wherein the variable valve train drives at least one of the intake valve and/or the exhaust valve to open and close using electromagnetic force.

11. (Amended) ~~The internal combustion engine according to claim 10, further comprising~~ An internal combustion engine comprising:

a variable valve train capable of adjusting at least one of an opening and closing timing and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;

a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage;

a throttle valve controller that closes the throttle valve by a predetermined amount when a predetermined condition is satisfied; and

a valve train controller that, in a case where the throttle valve control-  
~~means~~controller closes the throttle valve by the predetermined amount, controls the variable valve train so as to alter at least one of the opening and closing timing and/or the opening amount of at least one of the intake valve and the exhaust valve with respect to a case where the throttle valve controller does not close the throttle valve by the predetermined amount.

15. (Amended) ~~The internal combustion engine according to claim 10, further comprising~~ An internal combustion engine comprising:

a variable valve train capable of adjusting at least one of an opening and closing timing and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;

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a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage;

a throttle valve controller that closes the throttle valve by a predetermined amount when a predetermined condition is satisfied; and

an intake air amount controller that controls the variable valve train to adjust an intake air amount of the internal combustion engine while retaining the throttle valve at a predetermined opening amount, when the internal combustion engine is in a predetermined operating state, wherein the throttle valve controller closes the throttle valve by the predetermined amount when the predetermined condition is satisfied while the intake air amount controller is controlling the intake air amount of the internal combustion engine.

16. (Amended) The internal combustion engine according to claim 15, further comprising a valve train controller that controls the variable valve train such that the intake air amount of the internal combustion engine does not change when the throttle valve controller closes the throttle valve by the predetermined amount.

17. (Amended) The internal combustion engine according to claim ~~10~~11, wherein the negative pressure mechanism is an evaporation fuel reflux mechanism for refluxing evaporation fuel generated in a fuel tank into the intake passage, and the throttle valve controller closes the throttle valve by the predetermined amount when the evaporation fuel reflux mechanism needs to be operated.

18. (Amended) The internal combustion engine according to claim ~~10~~11, wherein the variable valve train drives at least one of the intake valve ~~and/or~~and the exhaust valve to open and close using electromagnetic force.

19. (Amended) An internal combustion engine comprising:



a variable valve train capable of adjusting at least one of an opening and closing timing ~~and/or~~ and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;

a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage;

a throttle valve controller that closes the throttle valve by a predetermined amount when a predetermined condition is satisfied; and

a valve train controller that, in a case where the throttle valve ~~control-~~ ~~means~~ controller closes the throttle valve by the predetermined amount, controls the variable valve train so as to alter at least one of the opening and closing timing ~~and/or~~ and the opening amount of at least one of the intake valve and the exhaust valve with respect to a case where the throttle valve controller does not close the throttle valve by the predetermined amount.

23. (Amended) The internal combustion engine according to claim 19, wherein the variable valve train drives at least one of the intake valve ~~and/or~~ and the exhaust valve to open and close using electromagnetic force.

24. (Amended) An internal combustion engine comprising:

a variable valve train capable of adjusting at least one of an opening and closing timing ~~and/or~~ and an opening amount of at least one of an intake valve and an exhaust valve of the internal combustion engine;

a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage;



an intake air amount controller that controls the variable valve train to adjust an intake air amount of the internal combustion engine while retaining the throttle valve at a predetermined opening amount, when an operating state of the internal combustion engine is in a predetermined operating region; and

a throttle valve controller that closes the throttle valve by a predetermined amount from the predetermined opening amount when a predetermined condition is satisfied while the intake air amount controller is controlling the intake air amount of the internal combustion engine.

25. (Amended) The internal combustion engine according to claim 24, wherein the variable valve train drives at least one of the intake valve ~~and/or~~ and the exhaust valve to open and close using electromagnetic force.

26. (Amended) An internal combustion engine comprising:

a variable valve train capable of adjusting at least one of an opening and closing timing ~~and/or~~ and an opening amount of at least one of an intake valve and an exhaust valve of an internal combustion engine;

a negative pressure mechanism that operates using an intake pipe negative pressure generated in an intake passage of the internal combustion engine;

a throttle valve for adjusting a flow rate of intake air flowing through the intake passage;

an intake air amount controller that controls the variable valve train to adjust an intake air amount of the internal combustion engine while retaining the throttle valve at a predetermined opening amount, when an operating state of the internal combustion engine is in a predetermined operating region;

an evaporation fuel reflux mechanism ~~for refluxing~~ that refluxes evaporation fuel generated in a fuel tank of the internal combustion engine into the intake passage; and

a throttle valve controller that closes the throttle valve by a predetermined amount from the predetermined opening amount when the evaporation fuel reflux mechanism needs to be operated while the intake air amount controller is controlling the intake air amount of the internal combustion engine.

27. (Amended) The internal combustion engine according to claim 26, wherein the variable valve train drives at least one of the intake valve ~~and/or~~ and the exhaust valve to open and close using electromagnetic force.

